

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

BY LAND OR SEA?

An investigation into the travel preferences
and potential for ferry patronage of the
residents of the Whangaparaoa Peninsula

A thesis presented in partial fulfillment of the requirements for the degree
of Master of Management at Massey University, Albany, New Zealand.

JULIET MARY HYATT

2003

ABSTRACT

The aim of this study was to establish an understanding of the travel preferences of the residents of the Whangaparaoa Peninsula with a view to assessing the likelihood of future patronage of a ferry service from the Whangaparaoa Peninsula to downtown Auckland and to North Shore City. The factors that impact on the travel decision-making of residents in respect of ferry travel were identified, to assist both operators and local bodies responsible for the provision of transport infrastructure in their planning for improved ferry services from the Whangaparaoa Peninsula.

A survey of residents of the Whangaparaoa Peninsula was conducted by way of a self-reply postal questionnaire sent to a random sample of 700 residents over the age of 20 years. The questionnaire was designed to collect data concerning current travel behaviour and stated preferences in respect of ferry travel. A total of 308 completed questionnaires were received. A second self-reply questionnaire was administered by the researcher to patrons of the current Gulf Harbour commuter ferry service. Twenty-seven responses were obtained to this questionnaire, which asked ferry users for information about travel patterns and their opinion of the attributes of the service.

Analysis of the data collected by the survey shows that almost half of the commuting population of the Whangaparaoa Peninsula travels regularly to central Auckland or North Shore City and by far the most popular mode of transport is the private car. Despite the majority of those travelling by car experiencing significant delays due to traffic congestion, many have expressed satisfaction with their current travel mode due to the convenience and flexibility it affords.

The current ferry service from Gulf Harbour carries little of the total commuter population but a significant proportion of respondents have indicated they would be likely to use a ferry service, even occasionally, if a terminal was located at Arkles Bay. There is no great support for a service calling in at Browns Bay en route for downtown Auckland due to concerns over the extra total travelling time this would entail.

The factors identified by both current and prospective ferry users as crucial to continued and future patronage are an increase in service frequency, reliability and reduced trip time, comfortable seating and a competitive pricing scheme. There is some interest in integration of both the fare package and the service with other transport modes. This information can be utilised by ferry service operators in their marketing and operational planning.

This research has indicated a fair level of interest in the continuation and upgrading of the current ferry service from the Whangaparaoa Peninsula. These findings are of value, for future decision making and planning, to the bodies involved in the provision of ferry transport, including the Auckland Regional Council (ARC) and Auckland Regional Transport Limited (ARTNL).

In addition to its practical management applications, this research has contributed to the body of travel behaviour knowledge in respect of both non-users' and users' perceptions of ferry travel. The attributes of the ferry service which respondents have indicated are influential in the choice to travel by this mode, reflect the factors recorded in travel behaviour research as influencing the use of other public transport modes such as bus or rail. These findings have therefore provided a deeper understanding of urban ferry travel behaviour and have enabled a model for the travel decision-making by residents of the Whangaparaoa Peninsula to be developed.

ACKNOWLEDGEMENTS

I am greatly indebted to my supervisor Dr. Mark Orams for his invaluable advice, guidance and patience throughout the year. The assistance of other Massey University staff, including Kaye Thorn, Associate Professor Denny Meyer, Keith Macky, Dr. Janet Sayers, Professor Kerr Inkson and all those in the Department of Management and International Business at Massey University, Albany is also very much appreciated. I acknowledge the financial support of the Massey University Masterate Scholarship programme, which has made it possible for me to devote this year to this research.

Thanks are due to Auckland Regional Transport Network Limited for its financial contribution to survey costs and to Kawau Kat for allowing me to conduct the ferry users' survey onboard the Gulf Harbour ferry.

My family has provided incredible support and understanding throughout the year. I wish to express my sincere thanks to Kevin, Luca, Ben, Ella, wee Reuben, who has spent the first year of his life in and out of Massey University's library, and my parents Cynthia and John. Thanks also to my parents-in-law, John and Julia, for transport research information and help with the children.

A huge network of friends has also stepped in to look after the baby, fold questionnaires and proof read. Many thanks go to Anna, Wendy, Sarah, Jane T, Raewyn, Jane B, Trish, Jenny, Kerry, Tammy, Donna and many more.

TABLE OF CONTENTS

Abstract	ii
Acknowledgements	iv
Table of Contents	v
List of Tables	viii
List of Figures and Plates	xi
Chapter One: Introduction	1
Chapter Two: Literature Review	6
2.1 Introduction	6
2.2 Method of searching literature	8
2.3 Consumer behaviour	9
2.4 Travel behaviour	19
2.5 Public transport	31
2.6 Ferry travel	45
2.7 Local studies and reports	51
2.8 Geographic factors	58
2.9 Summary	60
Chapter Three: Methods	63
3.1 Introduction	63
3.2 Aim of research	63
3.3 Data source	67
3.4 Data collection	68
3.5 Survey	69
3.6 Survey response	79
3.7 Data analysis	86
3.8 Data validation	88
3.9 Limitations	89
3.10 Summary	91

Chapter Four: Presentation of results	92
4.1 Introduction	92
4.2 Work patterns and travel behaviour of residents of the Whangaparaoa Peninsula	93
4.3 Non-commuting travel to central Auckland	103
4.4 Non-commuting travel to the North Shore	108
4.5 Ferry users	113
4.6 Terminal location	122
4.7 Features of ferry service	125
4.8 Reasons for not using the ferry	136
4.9 Summary	138
 Chapter Five: Discussion	 139
5.1 Introduction	139
5.2 Implications of current travel behaviour and preferences for a ferry service	139
5.3 Satisfaction with current travel mode	147
5.4 Ferry service features	150
5.5 Preferred terminal location	157
5.6 Implications of reasons for choosing not to travel by ferry	159
5.7 Travel behaviour model	161
5.8 Summary	164
 Chapter Six: Conclusions and Recommendations	 165
6.1 Fulfilment of thesis objectives	165
6.2 Important findings	166
6.3 Recommendations	169
6.4 Success and limitations of research	171
6.5 Future research	173
6.6 Significance of findings	174
 References	 176

Appendices:

- Appendix A** Map of Whangaparaoa Peninsula
- Appendix B** Travel behaviour questionnaire TQ1
- Appendix C** Ferry users' questionnaire FQ2 and accompanying letter
- Appendix D** Massey University Human Ethics Committee approval letter
- Appendix E** Pilot study letter
- Appendix F** Letter accompanying questionnaire TQ1
- Appendix G** Follow-up letter for TQ1
- Appendix H** Census 2001 results

LIST OF TABLES

Table

3.5.1	Percentage of sample male and female populations	78
3.5.2	Percentage of sample population residing in each area of the Whangaparaoa Peninsula	79
3.6.1	Percentage of respondent population residing in each area of the Whangaparaoa Peninsula	81
3.6.2	Percentage of respondent male and female populations	82
3.6.3	Percentage of respondents' age groupings	82
3.6.4	Percentage of respondents' means of travel to work	83
4.2.1	Regular day-time week day activities	93
4.2.2	Work/study destinations for commuters	94
4.2.3	Mode of transport to work or study	95
4.2.4	Frequency of commuting to central Auckland and the North Shore	96
4.2.5	Time of travel to work/study	97
4.2.6	Length of journey to work or study in central Auckland and the North shore	99
4.2.7	Cause of delay for commuters	99
4.2.8	Need for car during working day	100
4.2.9	Number of occupants in commuting car	100
4.2.10	Parking costs for commuters	101
4.2.11	Satisfaction of commuters with current mode of transport	102

4.3.1	Frequency of non-commuting trips to central Auckland by gender and age	104
4.3.2	Reason for trip to central Auckland by transport mode	105
4.3.3	Length of non-commuting journey to central Auckland	106
4.3.4	Cause of delay for non-commuting trips to central Auckland	106
4.3.5	Level of satisfaction with non-commuting travel mode to central Auckland	107
4.4.1	Frequency of non-commuting trips to the North Shore by gender and age	109
4.4.2	Reason for non-commuting travel to the North Shore by transport mode	110
4.4.3	Length of non-commuting journey to the North Shore	111
4.4.4	Cause of delay for non-commuting trips to the North Shore	112
4.4.5	Level of satisfaction with non-commuting travel mode to the North Shore	112
4.5.1	Impact of weather on ferry travel	115
4.5.2	Impact of traffic congestion on decision to travel by ferry	116
4.5.3	Level of satisfaction with ferry service	117
4.5.4	Frequency of non-ferry travel to central Auckland	118
4.5.5	Days of non-ferry travel to central Auckland	118
4.5.6	Satisfaction with non-ferry travel to central Auckland	119
4.5.7	Frequency of non-ferry travel to the North Shore	120
4.5.8	Days of non-ferry travel to the North Shore	120
4.6.1	Likelihood of using ferry from location other than Gulf Harbour by preferred terminal location (TQ1)	124

4.6.2	Likelihood of using ferry from location other than Gulf Harbour (FQ2)	125
4.7.1	Likelihood of using ferry service via Browns Bay	126
4.7.2	Likelihood of using ferry service <i>to</i> Browns Bay	127
4.7.3	Factors leading to ferry use for non-ferry users	128
4.7.4	Single most important factor leading to ferry use (TQ1)	129
4.7.5	Single most important factor leading to ferry use (FQ2)	131
4.7.6	Onboard services	132
4.7.7	Ferry users' opinion of frequency of current service	133
4.7.8	Preferred highest return fare to Downtown Auckland by commuting destination (TQ1)	134
4.7.9	Ferry users' opinion of price of current service	135

LIST OF FIGURES & PLATES

Figure

2.2.1	Research fields forming the Literature Review	8
2.3.1	Consumer behaviour model	11
2.3.2	Travel-buying behaviour	16
2.4.1	Conceptual model of travel decision making	24
2.6.1	Ferry service success factors	49
4.6.1	Likelihood of commuters using ferry from location other than Gulf Harbour by commuting destination	122
4.8.1	Reasons for never using the ferry service by place of residence	137
5.7.1	Travel decision making for residents of the Whangaparaoa Peninsula	163

Plate

1.1	Gulf Harbour ferry berthed at downtown Auckland	5
5.2.1	Gulf Harbour ferry at Pier 3 downtown Auckland	144
5.4.1	Parking at Gulf Harbour ferry terminal	153
5.5.1	Gulf Harbour ferry terminal ticket office	159
6.6.1	Ferry departing Gulf Harbour marina	175

CHAPTER ONE

INTRODUCTION

Public passenger transport systems are currently a focus of regional development and planning bodies in the Auckland area (Auckland Regional Council, 2002; North Shore City Council, 2000). Moves to improve road systems are seen as necessary, but there is concern that this will simply lead to increased use of private motor vehicles and hence increased congestion, and there is evidence to suggest this has already happened (North Shore City Council, 2000). The Energy Efficiency and Conservation Authority has cautioned that transport now outstrips the industrial sector in energy use and New Zealand has the highest CO₂ emissions from the transport sector (45%) in the OECD (Kennedy, 2000). Public transport is seen as a way to combat transport energy use and thus help the economy and the environment (Kennedy, 2000).

One mode of public transport that has the potential to address concerns over pollution and congestion is ferry travel. Auckland is geographically suited to a ferry network and indeed a ferry service has operated for many years, linking particularly the North Shore to downtown Auckland. The Auckland Regional Council (ARC), in its draft Auckland Regional Ferry Strategy (PPK Environment & Infrastructure Pty Ltd, 2000), has indicated its commitment to developing a strategy that assists in reducing peak hour traffic congestion and that increases the share ferry travel has in regional commuter travel.

As part of the strategy to improve the public transport network in the Auckland region, a regional LATE (Local Authority Trading Enterprise), Auckland Regional Transport Network Limited (ARTNL), has been established. One of its objectives is the upgrading of existing ferry terminals and the construction of new terminals

around the shores of Auckland to introduce new services at new locations (Auckland Regional Council, 2002).

An area of the greater Auckland region that is experiencing considerable population growth is the Whangaparaoa Peninsula in Rodney District (PPK Environment & Infrastructure Pty Ltd, 2000). This growth, in combination with the geographic constraints of a peninsula, is contributing to serious access problems for those who live on the Whangaparaoa Peninsula (Jamieson & Williams, 1998).

Rodney District Council (RDC) has been working on plans to address the access issue for many years. A strategic approach to finding solutions was articulated in the 1996/97 Annual Plan (RDC, 1996). It required the RDC to identify the best solution for the transport needs of the Whangaparaoa Peninsula, based on the wider environmental, social, and economic impacts of the alternative options. The most recent draft Annual Plan for 2003/2004 reiterates the desire “to progress a solution to Whangaparaoa Peninsula traffic congestion” (RDC, 2003, p.8).

In its consideration of alternative solutions, the access options study commissioned by the RDC (Jamieson & Williams, 1998) recommended that the ferry be part of the long-term strategy and that the use of the ferry be encouraged. The improvement of ferry services will provide additional flexibility for commuters between the Whangaparaoa Peninsula, the North Shore and Downtown Auckland.

The studies conducted to date have focussed primarily on the physical practicalities of providing a ferry service from the Peninsula (Jamieson & Williams, 1998) and “future patronage potential”. The latter was estimated from assumptions about population growth, the proportion of work trips to downtown Auckland and the ability of the ferry service to achieve a level of frequency and time savings to compete with other travel modes (PPK Environment & Infrastructure Pty Ltd, 2000).

Current travel behaviour literature supports the validity of obtaining data based on the “stated preferences” (what individuals state they would like to do) of potential travellers as well as observing their current travel behaviour (revealed preferences) (Louviere & Hensher, 2001). No studies have specifically researched the stated travel preferences of residents of the Whangaparaoa Peninsula to assess the likelihood of them switching to ferry travel.

This study therefore seeks to “fill the gap” and complete the travel picture for the residents of the Whangaparaoa Peninsula in connection with their travel to downtown Auckland and to North Shore City. The focus is on both their current travel patterns and their attitude towards the present and possible alternative ferry services.

ARTNL has indicated that such a study of residents of the Whangaparaoa Peninsula would be of value to their assessment of potential services, as the existing Gulf Harbour ferry service is currently not well patronised and not cost effective (FerryBiz Solutions Ltd, 2001b). There is a need to ascertain whether an improved ferry service would be patronised and whether residents of the Whangaparaoa Peninsula would be likely to prefer a ferry terminal at another location on the Peninsula.

Achieving an understanding of the needs, expectations and impressions of Whangaparaoa Peninsula residents in respect of ferry travel can also, if the improvements appear warranted, form a valuable basis for the design and marketing of the revamped service. No such research has been conducted to date in this area.

The research questions on which this study is founded are therefore the following:

- What are the travel preferences of the residents of the Whangaparaoa Peninsula for journeys from the Whangaparaoa Peninsula to central Auckland and to North Shore City?
- What factors are likely to lead the residents of the Whangaparaoa Peninsula to travel by ferry to central Auckland or to North Shore City?

This study is primarily a descriptive one (Zikmund, 2003) seeking to determine specifically the likelihood of ferry patronage by Whangaparaoa Peninsula residents and the considerations which lead to ferry patronage. Implicit in this research, however, is the search for an answer to the broader question of why individuals choose to travel by ferry.

Layout

The thesis is presented in six chapters. Chapter Two reviews a wide range of literature from the fields of consumer behaviour, travel behaviour, public transport, services management and urban transport planning that demonstrate consistent themes in the travel decision making process for individuals. Marketing and feasibility studies of ferry and other transport and access options are discussed together with relevant local and regional transport planning documents.

Chapter Three sets out the research objectives and the methods employed in this study to attain them. Details are given of the survey method applied, including the sampling frame, pre-test, questionnaire format and administration of the two questionnaires. There is an explanation of the techniques used for analysing the data and a discussion of the limitations of both the method and the data obtained.

Chapter Four provides a comprehensive presentation of the results of the analysis of the data collected with the two questionnaires. Charts and tables aid in the visual

representation of the frequencies and cross-tabulations of responses. Statistically significant relationships between variables are identified using chi-squared tests of association.

Chapter Five contains a discussion of the results set out in Chapter Four and the implications of those results for a ferry service from the Whangaparaoa Peninsula. A travel decision-making model is developed, based on a model for tourist travel buying behaviour discussed in Chapter Two.

Final conclusions are made in Chapter Six together with recommendations for both ferry operators and those responsible for the transport infrastructure in the region. The chapter closes with suggestions for the direction of future research in this field and a reflection on the significance of the findings.

Plate 1.1 Gulf Harbour ferry berthed at downtown Auckland

